

WHAT IS CLAIMED IS:

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1. A telecommunications apparatus including a substantially box-shaped subrack having a back wiring board mounting a connector and a plurality of shell-type plug-in units inserted in  
10 the subrack so that a connector of each of the plug-in units is connected to the connector of the subrack, the telecommunications apparatus comprising:

15 a flexible, electrically conductive seal member elastically deformedly disposed between a lateral surface of the plug-in unit inserted into the subrack and an interior portion of the subrack so as to enclose both the plug-in unit connector.

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25 2. A telecommunications apparatus including a substantially box-shaped subrack having a back wiring board mounting a connector and a plurality of shell-type plug-in units inserted in  
the subrack so that a connector of each of the plug-in units is connected to the connector of the subrack, the subrack comprising:

30 a frame member comprising a substantially square metallic frame, a plurality of panes aligned within the frame so as to form substantially rectangular openings that accommodate and surround the back wiring board connectors between adjacent  
35 panes, and a flexible, electrically conductive seal member covering the frame and the panes,

the frame member being fixedly mounted on a

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surface of the back wiring board disposed opposite the inserted edge of the plug-in unit,

a portion of a lateral surface of the plug-in unit inserted into the subrack and surrounding 5 the plug-in unit connector pressing against the frame member so as to elastically deform the seal member and close the openings when the plug-in unit is inserted into the subrack.

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3. The telecommunications apparatus as claimed in claim 2, wherein:

15 the openings in the frame member are oblong shaped; and

the seal member has a flange portion on a side of the seal member disposed opposite an inserted end of the plug-in unit,

20 the flange portion entering an interior of the oblong opening.

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4. The telecommunications apparatus as claimed in claim 2, wherein:

the openings in the frame member are oblong shaped;

30 the seal member has a flange portion on a side of the seal member disposed opposite an inserted end of the plug-in unit, the flange portion entering an interior of the oblong opening; and

35 a lateral surface of the plug-in unit that is inserted into the subrack and that surrounds the plug-in unit connector having an oblong banked portion tapered at a periphery thereof,

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the tapered surface of the oblong banked portion pressing the flange portion of the seal member, the seal member elastically deforming so as to conform to the tapered surface when the plug-in  
5 unit is mounted in the subrack.

10           5. The telecommunications apparatus as claimed in claim 2, wherein:

15           the seal member comprises a flange portion provided on a surface of the seal member disposed opposite the back wiring board, the flange portion projecting from an edge of the oblong opening,

20           the flange portion pressed against the back wiring board and elastically deformed when the frame member is fixedly mounted on the back wiring board.

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6. The telecommunications apparatus as claimed in claim 2, wherein:

25           the seal member comprises, on a surface of the seal member disposed opposite the back wiring board, a first flange portion projecting from an edge of the oblong opening, and a second flange portion projecting from a periphery of the frame  
30 member,

35           the first and second flange portions pressed against the back wiring board and elastically deformed when the frame member is fixedly mounted on the back wiring board.

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7. A telecommunications apparatus  
including a substantially box-shaped subrack having  
a back wiring board mounting a connector and a  
5 plurality of shell-type plug-in units inserted in  
the subrack so that a connector of each of the plug-  
in units is connected to the connector of the  
subrack, the subrack comprising:  
a frame member comprising a substantially  
10 square metallic frame and a plurality of panes  
aligned within the frame so as to form substantially  
rectangular openings that accommodate and surround  
the back wiring board connectors between adjacent  
panes, the frame member being fixedly mounted on a  
15 surface of the back wiring board disposed opposite  
the inserted edge of the plug-in unit,  
the plug-in unit having a flexible,  
electrically conductive seal member shaped so as to  
surround the plug-in connector,  
20 the seal member elastically deforming so as  
to contact the frame member when the plug-in unit is  
mounted in the subrack.

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8. A telecommunications apparatus  
including a substantially box-shaped subrack having  
a back wiring board mounting a connector and a  
30 plurality of shell-type plug-in units inserted in  
the subrack so that a connector of each of the plug-  
in units is connected to the connector of the  
subrack, each plug-in unit comprising:  
a flexible, electrically conductive seal  
35 member shaped so as to surround the plug-in  
connector,  
the seal member elastically deforming so as

to contact the back wiring board when the plug-in unit is mounted in the subrack.

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9. The telecommunications apparatus as claimed in claim 1, wherein the seal member is made of a material selected from a group consisting of  
10 electrically conductive rubber, electrically conductive elastomer, electrically conductive sponge, electrically conductive plastic, electrically conductive gel rubber, electrically conductive silicon rubber, or a dispense gasket.

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10. A telecommunications apparatus including a substantially box-shaped subrack having a back wiring board mounting a connector and a plurality of shell-type plug-in units inserted in the subrack so that a connector of each of the plug-in units is connected to the connector of the  
25 subrack, the subrack comprising:

a frame member comprising a substantially square metallic frame and a plurality of panes aligned within the frame so as to form substantially rectangular openings that accommodate and surround  
30 the back wiring board connector between adjacent panes, the frame member being fixedly mounted on a surface of the back wiring board disposed opposite the inserted edge of the plug-in unit; and

35 a seal member comprising a long, thin core spring member, a finger gasket that engages the core spring member and an electrically conductive cloth wrapped around the finger gasket, the seal member

being mounted on inner sides of the frame member openings so as to extend over an entire interior surface of said openings,

the plug-in unit having a cover part shaped  
5 so as to conform to the frame member openings and surround the plug-in unit connector on a lateral surface of the plug-in unit inserted into the subrack, edge surfaces of the cover projecting beyond edges of the plug-in unit connector,  
10 the cover part fitting the frame member openings when the plug-in unit is inserted into the subrack so as to elastically deform the finger gasket, an elastic force of the elastically deformed finger gasket causing the electrically conductive  
15 cloth to contact the cover part along an entire outer periphery surface of the cover part.

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11. A shell-type plug-in unit enclosed by a metal casing, containing a printed board therein and inserted into a substantially box-shaped subrack having a back wiring board mounting a connector so  
25 that a connector of the plug-in unit is connected to the connector of the subrack, a lateral surface of the plug-in unit inserted into the subrack and surrounding the plug-in unit connector having a substantially oblong banked portion with a tapered  
30 periphery.

35 12. A shell-type plug-in unit enclosed by a metal casing, containing a printed board therein and inserted into a substantially box-shaped subrack

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having a back wiring board mounting a connector so  
that a connector of the plug-in unit is connected to  
the connector of the subrack, the plug-in unit  
having an electrically conductive optical fiber seal  
5 member having a through-hole of a size capable of  
admitting an optical fiber and a slit that extends  
from an external unit to the through-hole, the  
optical fiber seal member being compressed after the  
optical fiber has been passed through the slit and  
10 fitted in the through-hole so as to engage an  
opening formed on the metal casing of a size capable  
of admitting a plurality of optical fibers extending  
from a photoelectric conversion module mounted on a  
printed wiring board.

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13. A shell-type plug-in unit enclosed by a  
20 metal casing, containing a printed board therein and  
inserted into a substantially box-shaped subrack  
having a back wiring board mounting a connector so  
that a connector of the plug-in unit is connected to  
the connector of the subrack,  
25 the plug-in unit having a cover part shaped  
so as to conform to the frame member openings and  
surround the plug-in unit connector on a lateral  
surface of the plug-in unit inserted into the  
subrack, edge surfaces of the cover part projecting  
30 beyond edges of the plug-in unit connector.

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